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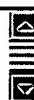
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<u>L9</u>	5638163.pn.	1	<u>L9</u>
<u>L8</u>	5638164.pn.	1	<u>L8</u>
<u>L7</u>	5638164.pn.	1	<u>L7</u>
<u>L6</u>	5689446.pn.	1	<u>L6</u>
<u>L5</u>	5689446.pn.	1	<u>L5</u>
<u>L4</u>	5719664.pn.	1	<u>L4</u>
<u>L3</u>	6473079	4	<u>L3</u>
<u>L2</u>	5988862.pn.	1	<u>L2</u>
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L13: Entry 1 of 14

File: USPT

Jan 25, 2005

US-PAT-NO: 6847462

DOCUMENT-IDENTIFIER: US 6847462 B1

TITLE: Integrated system for quickly and accurately imaging and modeling three-dimensional objects

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 2. Document ID: US 6734849 B2

L13: Entry 2 of 14

File: USPT

May 11, 2004

US-PAT-NO: 6734849

DOCUMENT-IDENTIFIER: US 6734849 B2

TITLE: Integrated system for quickly and accurately imaging and modeling three-dimensional objects

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 3. Document ID: US 6724393 B2

L13: Entry 3 of 14

File: USPT

Apr 20, 2004

US-PAT-NO: 6724393

DOCUMENT-IDENTIFIER: US 6724393 B2

TITLE: System and method for sculpting digital models

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 4. Document ID: US 6512993 B2

L13: Entry 4 of 14

File: USPT

Jan 28, 2003

US-PAT-NO: 6512993

DOCUMENT-IDENTIFIER: US 6512993 B2

TITLE: Integrated system for quickly and accurately imaging and modeling three-dimensional objects

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 5. Document ID: US 6512518 B2

L13: Entry 5 of 14

File: USPT

Jan 28, 2003

US-PAT-NO: 6512518

DOCUMENT-IDENTIFIER: US 6512518 B2

TITLE: Integrated system for quickly and accurately imaging and modeling three-dimensional objects

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 6. Document ID: US 6473079 B1

L13: Entry 6 of 14

File: USPT

Oct 29, 2002

US-PAT-NO: 6473079

DOCUMENT-IDENTIFIER: US 6473079 B1

TITLE: Integrated system for quickly and accurately imaging and modeling three-dimensional objects

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 7. Document ID: US 6420698 B1

L13: Entry 7 of 14

File: USPT

Jul 16, 2002

US-PAT-NO: 6420698

DOCUMENT-IDENTIFIER: US 6420698 B1

TITLE: Integrated system for quickly and accurately imaging and modeling three-dimensional objects

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 8. Document ID: US 6330523 B1

L13: Entry 8 of 14

File: USPT

Dec 11, 2001

US-PAT-NO: 6330523

DOCUMENT-IDENTIFIER: US 6330523 B1

**** See image for Certificate of Correction ****

TITLE: Integrated system for quickly and accurately imaging and modeling three-

dimensional objects

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 9. Document ID: US 6246468 B1

L13: Entry 9 of 14

File: USPT

Jun 12, 2001

US-PAT-NO: 6246468

DOCUMENT-IDENTIFIER: US 6246468 B1

**** See image for Certificate of Correction ****

TITLE: Integrated system for quickly and accurately imaging and modeling three-dimensional objects

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 10. Document ID: US 6100893 A

L13: Entry 10 of 14

File: USPT

Aug 8, 2000

US-PAT-NO: 6100893

DOCUMENT-IDENTIFIER: US 6100893 A

**** See image for Certificate of Correction ****

TITLE: Constructing solid models using implicit functions defining connectivity relationships among layers of an object to be modeled

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 11. Document ID: US 6064398 A

L13: Entry 11 of 14

File: USPT

May 16, 2000

US-PAT-NO: 6064398

DOCUMENT-IDENTIFIER: US 6064398 A

TITLE: Electro-optic vision systems

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sentences	Attachments	Claims	KWIC	Draw D
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☐ 12. Document ID: US 5988862 A

L13: Entry 12 of 14

File: USPT

Nov 23, 1999

US-PAT-NO: 5988862

DOCUMENT-IDENTIFIER: US 5988862 A

TITLE: Integrated system for quickly and accurately imaging and modeling three dimensional objects

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sentences	Attachments	Claims	KWIC	Draw D
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☐ 13. Document ID: US 5280547 A

L13: Entry 13 of 14

File: USPT

Jan 18, 1994

US-PAT-NO: 5280547

DOCUMENT-IDENTIFIER: US 5280547 A

TITLE: Dense aggregative hierarhical techniques for data analysis

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sentences	Attachments	Claims	KWIC	Draw D
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☐ 14. Document ID: US 5250979 A

L13: Entry 14 of 14

File: USPT

Oct 5, 1993

US-PAT-NO: 5250979

DOCUMENT-IDENTIFIER: US 5250979 A

TITLE: Technique suited for use in fixed focus cameras for improving image quality for non-standard display sizes and/or different focal length photographing modes

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KMIC	Drawn D
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1 Uncertainty in object pose determination with three light-stripe range measurements
Kemmotsu, K.; Kanade, T.;

Robotics and Automation, 1993. Proceedings., 1993 IEEE International Conference on , 2-6 May 1993

Pages:128 - 134 vol.3

[\[Abstract\]](#) [\[PDF Full-Text \(564 KB\)\]](#) **IEEE CNF**
2 Multiple-target frequency-modulated continuous-wave ranging by evaluation of the impulse response phase
Stolle, R.; Schiek, B.;

Instrumentation and Measurement, IEEE Transactions on , Volume: 46 , Issue 2 , April 1997

Pages:426 - 429

[\[Abstract\]](#) [\[PDF Full-Text \(120 KB\)\]](#) **IEEE JNL**
3 Uncertainty in object pose determination with three light-stripe range measurements
Kemmotsu, K.; Kanade, T.;

Robotics and Automation, IEEE Transactions on , Volume: 11 , Issue: 5 , Oct.

Pages:741 - 747

[\[Abstract\]](#) [\[PDF Full-Text \(624 KB\)\]](#) **IEEE JNL**
4 Rapid world modeling: fitting range data to geometric primitives
Feddema, J.T.; Little, C.Q.;

Robotics and Automation, 1997. Proceedings., 1997 IEEE International Conference on

on , Volume: 4 , 20-25 April 1997
Pages:2807 - 2812 vol.4

[\[Abstract\]](#) [\[PDF Full-Text \(476 KB\)\]](#) IEEE CNF

5 Estimating the position of a sphere from range images

Clouse, D.; Padgett, C.;

Aerospace Conference Proceedings, 2002. IEEE , Volume: 5 , 9-16 March 200.
Pages:5-2193 - 5-2204 vol.5

[\[Abstract\]](#) [\[PDF Full-Text \(657 KB\)\]](#) IEEE CNF

6 Metrology sensor characterization and pointing control for the form: interferometer testbed (FIT)

Shields, J.; Sirlin, S.; Wette, M.;

Aerospace Conference Proceedings, 2002. IEEE , Volume: 4 , 9-16 March 200.
Pages:4-1737 - 4-1745 vol.4

[\[Abstract\]](#) [\[PDF Full-Text \(951 KB\)\]](#) IEEE CNF

7 Determining reflectance parameters using range and brightness ima

Ikeuchi, K.; Sato, K.;

Computer Vision, 1990. Proceedings, Third International Conference on , 4-7 I
1990

Pages:12 - 20

[\[Abstract\]](#) [\[PDF Full-Text \(676 KB\)\]](#) IEEE CNF

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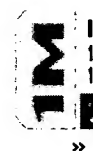
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Paul J. Besl, Ramesh C. Jain

March 1985 **ACM Computing Surveys (CSUR)**, Volume 17 Issue 1Full text available: [pdf\(7.76 MB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

A general-purpose computer vision system must be capable of recognizing three-dimensional (3-D) objects. This paper proposes a precise definition of the 3-D object recognition problem, discusses basic concepts associated with this problem, and reviews the relevant literature. Because range images (or depth maps) are often used as sensor input instead of intensity images, techniques for obtaining, processing, and characterizing range data are also surveyed.

2 [Model-based object recognition in dense-range images—a review](#)

Farshid Arman, J. K. Aggarwal

March 1993 **ACM Computing Surveys (CSUR)**, Volume 25 Issue 1Full text available: [pdf\(3.42 MB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

The goal in computer vision systems is to analyze data collected from the environment and derive an interpretation to complete a specified task. Vision system tasks may be divided into data acquisition, low-level processing, representation, model construction, and matching subtasks. This paper presents a comprehensive survey of model-based vision systems using dense-range images. A comprehensive survey of the recent publications in each subtask pertaining to dense-range image object recognition ...

Keywords: 3D object recognition, 3D representations, CAD-based vision, dense-range images, image understanding

3 [Volumetric shape description of range data using "Blobby Model"](#)

Shigeru Muraki

July 1991 **ACM SIGGRAPH Computer Graphics, Proceedings of the 18th annual conference on Computer graphics and interactive techniques**, Volume 25 Issue 4Full text available: [pdf\(8.98 MB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Recently in the field of computer vision, there have been many attempts to obtain a symbolic shape description of an object by fitting simple primitives to the range data of the


object. In this paper, we introduce the "*Blobby Model*" for automatically generating a shape description from range data. This model can express a 3D surface as an isosurface of a scalar field which is produced by a number of field generating primitives. The fields from many primitives are blended with each other a ...

Keywords: blobby model, energy minimization, generalized algebraic surface, implicit surface, range data analysis, ray tracing, volumetric shape description

4 A survey of methods for recovering quadrics in triangle meshes

Sylvain Petitjean

June 2002 **ACM Computing Surveys (CSUR)**, Volume 34 Issue 2

Full text available:  pdf(3.91 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In a variety of practical situations such as reverse engineering of boundary representation from depth maps of scanned objects, range data analysis, model-based recognition and algebraic surface design, there is a need to recover the shape of visible surfaces of a dense 3D point set. In particular, it is desirable to identify and fit simple surfaces of known type wherever these are in reasonable agreement with the data. We are interested in the class of quadric surfaces, that is, algebraic surfa ...

Keywords: Data fitting, geometry enhancement, local geometry estimation, mesh fairing, shape recovery

5 Model-based recognition in robot vision

Roland T. Chin, Charles R. Dyer

March 1986 **ACM Computing Surveys (CSUR)**, Volume 18 Issue 1

Full text available:  pdf(4.94 MB)


Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

This paper presents a comparative study and survey of model-based object-recognition algorithms for robot vision. The goal of these algorithms is to recognize the identity, position, and orientation of randomly oriented industrial parts. In one form this is commonly referred to as the "bin-picking" problem, in which the parts to be recognized are presented in a jumbled bin. The paper is organized according to 2-D, 2½-D, and 3-D object representations, which are used as the basis for ...

6 Computational Approaches to Image Understanding

Michael Brady

January 1982 **ACM Computing Surveys (CSUR)**, Volume 14 Issue 1

Full text available:  pdf(10.04 MB)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

7 Computational strategies for object recognition

Paul Suetens, Pascal Fua, Andrew J. Hanson

March 1992 **ACM Computing Surveys (CSUR)**, Volume 24 Issue 1

Full text available:  pdf(6.37 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

This article reviews the available methods for automated identification of objects in digital images. The techniques are classified into groups according to the nature of the computational strategy used. Four classes are proposed: (1) the simplest strategies, which work on data appropriate for feature vector classification, (2) methods that match models

to symbolic data structures for situations involving reliable data and complex models, (3) approaches that fit models to the photometry and ...

Keywords: image understanding, model-based vision, object recognition

8 What every computer scientist should know about floating-point arithmetic

David Goldberg

March 1991 **ACM Computing Surveys (CSUR)**, Volume 23 Issue 1

Full text available:  pdf(3.82 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

Floating-point arithmetic is considered as esoteric subject by many people. This is rather surprising, because floating-point is ubiquitous in computer systems: Almost every language has a floating-point datatype; computers from PCs to supercomputers have floating-point accelerators; most compilers will be called upon to compile floating-point algorithms from time to time; and virtually every operating system must respond to floating-point exceptions such as overflow. This paper presents a ...

Keywords: NaN, denormalized number, exception, floating-point, floating-point standard, gradual underflow, guard digit, overflow, relative error, rounding error, rounding mode, ulp, underflow

9 A review of vessel extraction techniques and algorithms

Cemil Kirbas, Francis Quek

June 2004 **ACM Computing Surveys (CSUR)**, Volume 36 Issue 2

Full text available:  pdf(8.06 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Vessel segmentation algorithms are the critical components of circulatory blood vessel analysis systems. We present a survey of vessel extraction techniques and algorithms. We put the various vessel extraction approaches and techniques in perspective by means of a classification of the existing research. While we have mainly targeted the extraction of blood vessels, neurovascular structure in particular, we have also reviewed some of the segmentation methods for the tubular objects that show ...

Keywords: Magnetic resonance angiography, X-ray angiography, medical imaging, neurovascular, vessel extraction

10 Autonomous land vehicle project at CMU

Takeo Kanade, Chuck Thorpe, William Whittaker

February 1986 **Proceedings of the 1986 ACM fourteenth annual conference on Computer science**

Full text available:  pdf(1.56 MB)

Additional Information: [full citation](#), [references](#)

11 Computational Stereo

Stephen T. Barnard, Martin A. Fischler

December 1982 **ACM Computing Surveys (CSUR)**, Volume 14 Issue 4

Full text available:  pdf(1.85 MB)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

12 The virtual human as a multimodal interface

Daniel Thalmann

May 2000 **Proceedings of the working conference on Advanced visual interfaces**

Full text available:  pdf(1.85 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)


This paper discusses the main issues for creating Interactive Virtual Environments with Virtual Humans emphasizing the following aspects: creation of Virtual Humans, gestures, interaction with objects, multimodal communication.

Keywords: action recognition, gestures, multimodal communication, virtual humans

13 Three-dimensional representations for computer graphics and computer vision

Norman Badler, Ruzena Bajcsy

August 1978 **ACM SIGGRAPH Computer Graphics , Proceedings of the 5th annual conference on Computer graphics and interactive techniques**, Volume 12 Issue 3

Full text available:  pdf(941.33 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Representing complex three-dimensional objects in a computer involves more than just evaluating its display capabilities. Other factors are the uses and costs of the representation, what operations can be performed on it and, ultimately, how useful it is for computer recognition or description of three-dimensional objects. Many of the questions which are posed arise from the joint consideration of computer graphics and computer vision, and a specific representation hierarchy is proposed for ...

Keywords: Computer graphics, Computer vision, Curved objects, Data structures, Object modelling, Representation conversions, Representation hierarchy, Three dimensional representations

14 Motion capture, editing & planning: Trackable surfaces

Igor Guskov, Sergey Klivanov, Benjamin Bryant

July 2003 **Proceedings of the 2003 ACM SIGGRAPH/Eurographics Symposium on Computer animation**


Full text available:  pdf(2.71 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We introduce a novel approach for real-time non-rigid surface acquisition based on tracking quad marked surfaces. The color-identified quad arrangement allows for automatic feature correspondence, tracking initialization, and simplifies 3D reconstruction. We present a prototype implementation of our approach together with several examples of acquired surface motions.

15 Implications of hierarchical N-body methods for multiprocessor architectures

Jaswinder Pal Singh, John L. Hennessy, Anoop Gupta

May 1995 **ACM Transactions on Computer Systems (TOCS)**, Volume 13 Issue 2

Full text available:  pdf(4.66 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

To design effective large-scale multiprocessors, designers need to understand the characteristics of the applications that will use the machines. Application characteristics of particular interest include the amount of communication relative to computation, the structure of the communication, and the local cache and memory requirements, as well as how these characteristics scale with larger problems and machines. One important class of applications is based on hierarchical N-body methods, w ...


Keywords: N-body methods, communication abstractions, locality, message passing,

parallel applications, parallel computer architecture, scaling, shared address space, shared memory

16 A survey of extensions to APL

Karl Fritz Ruehr

July 1982 **ACM SIGAPL APL Quote Quad , Proceedings of the international conference on APL**, Volume 13 Issue 1

Full text available:  [pdf\(3.57 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

A survey of proposed extensions to the APL language is made with emphasis placed on the motivations for various proposals, the differences between them and the consequences of their adoption. Some issues of a more general nature concerning the purpose, process and direction of language extension are also discussed. An extensive bibliography is provided with annotations concerning the nature, development and influence of various authors' works. Areas of extension encompassed by the survey in ...

17 The WarpEngine: an architecture for the post-polygonal age

Voicu Popescu, John Eyles, Anselmo Lastra, Joshua Steinhurst, Nick England, Lars Nyland

July 2000 **Proceedings of the 27th annual conference on Computer graphics and interactive techniques**

Full text available:  [pdf\(298.54 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)


We present the WarpEngine, an architecture designed for real-time imaged-based rendering of natural scenes from arbitrary viewpoints. The modeling primitives are real-world images with per-pixel depth. Currently they are acquired and stored off-line; in the near future real-time depth-image acquisition will be possible, the WarpEngine is designed to render in immediate mode from such data sources. The depth-image resolution is locally adapted by interpolation to match the resolution ...

Keywords: graphics hardware, image-based rendering

18 The Ray casting engine and Ray representatives

J. L. Ellis, G. Kedem, T. C. Lyerly, D. G. Thielman, R. J. Marisa, J. P. Menon, H. B. Voelcker

May 1991 **Proceedings of the first ACM symposium on Solid modeling foundations and CAD/CAM applications**

Full text available:  [pdf\(1.68 MB\)](#)

Additional Information: [full citation](#), [references](#), [index terms](#)

19 AI and computational logic and image analysis (AI): Concatenate feature extraction for robust 3D elliptic object localization

Yuichi Motai, Akio Kosaka

March 2004 **Proceedings of the 2004 ACM symposium on Applied computing**

Full text available:  [pdf\(371.28 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Developing an efficient object localization system for complicated industrial objects is an important, yet difficult robotic task. To tackle this problem, we have developed a system consisting first of a vision model acquisition editor, where the object salient features are acquired through a human-in-the-loop approach. Subsequently, two feature extraction algorithms, region-growing and edge-grouping, are applied to the object scene. Finally, by Kalman filter estimation of a proper ellipse representation ...


Keywords: 3D robot vision system, Kalman filter estimation, elliptic edge grouping,

human-in-the-loop segmentation, salient feature extraction

20 [ITS: a tool for rapidly developing interactive applications](#)

Charles Wiecha, William Bennett, Stephen Boies, John Gould, Sharon Greene

July 1990 **ACM Transactions on Information Systems (TOIS)**, Volume 8 Issue 3

Full text available:  [pdf\(2.61 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

The ITS architecture separates applications into four layers. The action layer implements back-end application functions. The dialog layer defines the content of the user interface, independent of its style. Content specifies the objects included in each frame of the interface, the flow of control among frames, and what actions are associated with each object. The style rule layer defines the presentation and behavior of a family of interaction techniques. Finally, the style program layer i ...

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21 [System support for pervasive applications](#)

 Robert Grimm, Janet Davis, Eric Lemar, Adam Macbeth, Steven Swanson, Thomas Anderson, Brian Bershad, Gaetano Borriello, Steven Gribble, David Wetherall
 November 2004 **ACM Transactions on Computer Systems (TOCS)**, Volume 22 Issue 4

Full text available: pdf(1.82 MB)

 Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Pervasive computing provides an attractive vision for the future of computing. Computational power will be available everywhere. Mobile and stationary devices will dynamically connect and coordinate to seamlessly help people in accomplishing their tasks. For this vision to become a reality, developers must build applications that constantly adapt to a highly dynamic computing environment. To make the developers' task feasible, we present a system architecture for pervasive computing, called & ...

Keywords: Asynchronous events, checkpointing, discovery, logic/operation pattern, migration, one.world, pervasive computing, structured I/O, tuples, ubiquitous computing

22 [Column: The design of APL](#)

 A. D. Falkoff, K. E. Iverson
 April 1975 **ACM SIGAPL APL Quote Quad**, Volume 6 Issue 1

Full text available: pdf(1.23 MB)

 Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

This paper discusses the development of APL, emphasizing and illustrating the principles underlying its design. The principle of simplicity appears most strongly in the minimization of rules governing the behavior of APL objects, while the principle of practicality is served by the design process itself, which relies heavily on experimentation. The paper gives the rationale for many specific design choices, including the necessary adjuncts for system management.

23 [Light field mapping: efficient representation and hardware rendering of surface light fields](#)

 Wei-Chao Chen, Jean-Yves Bouguet, Michael H. Chu, Radek Grzeszczuk
 July 2002 **ACM Transactions on Graphics (TOG) , Proceedings of the 29th annual conference on Computer graphics and interactive techniques**, Volume 21 Issue 3

Full text available: pdf(7.79 MB)

 Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

A light field parameterized on the surface offers a natural and intuitive description of the

view-dependent appearance of scenes with complex reflectance properties. To enable the use of surface light fields in real-time rendering we develop a compact representation suitable for an accelerated graphics pipeline. We propose to approximate the light field data by partitioning it over elementary surface primitives and factorizing each part into a small set of lower-dimensional functions. We show th ...

Keywords: compression algorithms, image-based rendering, rendering hardware, texture mapping

24 Out-of-core build of a topological data structure from polygon soup

Sara McMains, Joseph M. Hellerstein, Carlo H. Séquin

May 2001 **Proceedings of the sixth ACM symposium on Solid modeling and applications**

Full text available:  pdf(1.22 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)


Many solid modeling applications require information not only about the geometry of an object but also about its topology. Most interchange formats do not provide this information, which the application must then derive as it builds its own topological data structure from unordered, "polygon soup" input. For very large data sets, the topological data structure itself can be bigger than core memory, so that a naive algorithm for building it that doesn't take virtual memory access p ...



25 Slideshow: functional presentations

Robert Bruce Findler, Matthew Flatt

September 2004 **ACM SIGPLAN Notices , Proceedings of the ninth ACM SIGPLAN international conference on Functional programming**, Volume 39 Issue 9

Full text available:  pdf(1.11 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Among slide-presentation systems, the dominant application offers essentially no abstraction capability. Slideshow, an extension of PLT Scheme, represents our effort over the last several years to build an abstraction-friendly slide system. We show how functional programming is well suited to the task of slide creation, we report on the programming abstractions that we have developed for slides, and we describe our solutions to practical problems in rendering slides. We also describe a prototype ...



26 Gesture VR: vision-based 3D hand interace for spatial interaction

Jakub Segen, Senthil Kumar

September 1998 **Proceedings of the sixth ACM international conference on Multimedia**

Full text available:  pdf(819.27 KB)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)



27 The PORT Mathematical Subroutine Library

P. A. Fox, A. P. Hall, N. L. Schryer

June 1978 **ACM Transactions on Mathematical Software (TOMS)**, Volume 4 Issue 2

Full text available:  pdf(1.60 MB)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)



28 Programming at the processor-memory-switch level

M. R. Barbacci, C. B. Weinstock, J. M. Wing

April 1988 **Proceedings of the 10th international conference on Software engineering**

Full text available:  pdf(1.15 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)




Users of networks of heterogeneous processors are concerned with allocating specialized resources to tasks of medium to large size. They need to create processes, which are instances of tasks, allocate these processes to processors, and specify the communication patterns between processes. These activities constitute Processor-Memory-Switch (PMS) Level Programming, in contrast with traditional programming activities, which take place at the Instruction Set Processor ...

29 BPF+: exploiting global data-flow optimization in a generalized packet filter architecture

Andrew Begel, Steven McCanne, Susan L. Graham

August 1999 **ACM SIGCOMM Computer Communication Review , Proceedings of the conference on Applications, technologies, architectures, and protocols for computer communication**, Volume 29 Issue 4

Full text available:  [pdf\(1.55 MB\)](#)


Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

A *packet filter* is a programmable selection criterion for classifying or selecting packets from a packet stream in a generic, reusable fashion. Previous work on packet filters falls roughly into two categories, namely those efforts that investigate flexible and extensible filter abstractions but sacrifice performance, and those that focus on low-level, optimized filtering representations but sacrifice flexibility. Applications like network monitoring and intrusion detection, however, requ ...

30 Linda in context

Nicholas Carriero, David Gelernter

April 1989 **Communications of the ACM**, Volume 32 Issue 4

Full text available:  [pdf\(1.66 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

How can a system that differs sharply from all currently fashionable approaches score any kind of success? Here's how.

31 Correspondence between ALGOL 60 and Church's Lambda-notation: part I

P. J. Landin

February 1965 **Communications of the ACM**, Volume 8 Issue 2

Full text available:  [pdf\(1.75 MB\)](#)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

32 Overview of the first TREC conference

Donna Harman

July 1993 **Proceedings of the 16th annual international ACM SIGIR conference on Research and development in information retrieval**

Full text available:  [pdf\(1.13 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The first Text REtrieval Conference (TREC-1) was held in early November 1992 and was attended by about 100 people working in the 25 participating groups. The goal of the conference was to bring research groups together to discuss their work on a new large test collection. There was a large variety of retrieval techniques reported on, including methods using automatic thesaurii, sophisticated term weighting, natural language techniques, relevance feedback, and advanced pattern matching. As r ...

33 Deductive inference: question answering/theorem proving: A deductive model of control of a problem solver

Drew McDermott

June 1977 **ACM SIGART Bulletin**, Issue 63


Full text available:  [pdf\(673.17 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

The efficiency of problem-solving computer programs, has suffered from such programs willingness to search problem spaces blindly and their inability to accept new information that would help. A new approach is described, in which the problem solver is driven by a theorem prover which retrieves and chooses among solution plans. The theorem prover can accept new deductive rules expressed in the problem solver's control vocabulary. In this way, the advantages of determinism and extensibility are a ...

34 ENO: synthesizing structured sound spaces

Michel Beaudouin-Lafon, William W. Gaver

November 1994 **Proceedings of the 7th annual ACM symposium on User interface software and technology**

Full text available:  [pdf\(1.02 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

ENO is an audio server designed to make it easy for applications in the Unix environment to incorporate non-speech audio cues. At the physical level, ENO manages a shared resource, namely the audio hardware. At the logical level, it manages a sound space that is shared by various client applications. Instead of dealing with sound in terms of its physical description (i.e., sampled sounds), ENO allows sounds to be presented and controlled in terms of higher-level descriptions of sources, int ...

Keywords: auditory interfaces, client-server architecture, multimodal interfaces, non-speech audio, sound

35 Image Retrieval from the World Wide Web: Issues, Techniques, and Systems

M. L. Kherfi, D. Ziou, A. Bernardi

March 2004 **ACM Computing Surveys (CSUR)**, Volume 36 Issue 1

Full text available:  [pdf\(294.13 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)


With the explosive growth of the World Wide Web, the public is gaining access to massive amounts of information. However, locating needed and relevant information remains a difficult task, whether the information is textual or visual. Text search engines have existed for some years now and have achieved a certain degree of success. However, despite the large number of images available on the Web, image search engines are still rare. In this article, we show that in order to allow people to profi ...

Keywords: Image-retrieval, World Wide Web, crawling, feature extraction and selection, indexing, relevance feedback, search, similarity

36 Systems Issues: Robotics-based location sensing using wireless ethernet

Andrew M. Ladd, Kostas E. Bekris, Algis Rudys, Lydia E. Kavraki, Dan S. Wallach, Guillaume Marceau

September 2002 **Proceedings of the 8th annual international conference on Mobile computing and networking**

Full text available:  [pdf\(235.70 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

A key subproblem in the construction of location-aware systems is the determination of the position of a mobile device. This paper describes the design, implementation and analysis of a system for determining position inside a building from measured RF signal strengths of packets on an IEEE 802.11b wireless Ethernet network. Previous approaches to location awareness with RF signals have been severely hampered by non-linearity, noise and complex correlations due to multi-path effects, interferenc ...

Keywords: 802.11, localization, mobile systems, probabilistic analysis, wireless networks

37 Interactive ray tracing

Steven Parker, William Martin, Peter-Pike J. Sloan, Peter Shirley, Brian Smits, Charles Hansen
April 1999 **Proceedings of the 1999 symposium on Interactive 3D graphics**

Full text available:  pdf(954.25 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: parallel systems, ray tracing, shading models


38 Pad: an alternative approach to the computer interface

Ken Perlin, David Fox
September 1993 **Proceedings of the 20th annual conference on Computer graphics and interactive techniques**

Full text available:  pdf(234.36 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

39 Robotics: Natural methods for robot task learning: instructive demonstrations, generalization and practice

Monica N. Nicolescu, Maja J. Mataric
July 2003 **Proceedings of the second international joint conference on Autonomous agents and multiagent systems**

Full text available:  pdf(409.59 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Among humans, teaching various tasks is a complex process which relies on multiple means for interaction and learning, both on the part of the teacher and of the learner. Used together, these modalities lead to effective teaching and learning approaches, respectively. In the robotics domain, task teaching has been mostly addressed by using only one or very few of these interactions. In this paper we present an approach for teaching robots that relies on the key features and the general approach ...

Keywords: human-robot interaction, learning by demonstration, robotics

40 An Operator Which Locates Edges in Digitized Pictures

Manfred H. Hueckel
January 1971 **Journal of the ACM (JACM)**, Volume 18 Issue 1

Full text available:  pdf(1.26 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

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41 [Vision: Representation and use of knowledge in vision](#)

H. G. Barrow, J. M. Tenenbaum

 June 1975 **ACM SIGART Bulletin**, Issue 52

 Full text available: [pdf\(816.22 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

This paper summarizes the present state of research in scene analysis. It identifies fundamental information processing principles relevant to representation and Use of knowledge in vision and traces limitations of existing programs to compromises of these principles necessitated by extant processors. Some specific and general recommendations are offered regarding a productive course of research for the next decade.

42 [Full text indexing based on lexical relations an application: software libraries](#)

Y. S. Maarek, F. Z. Smadja

 May 1989 **ACM SIGIR Forum , Proceedings of the 12th annual international ACM SIGIR conference on Research and development in information retrieval**, Volume 23 Issue 1-2

 Full text available: [pdf\(970.81 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In contrast to other kinds of libraries, software libraries need to be conceptually organized. When looking for a component, the main concern of users is the functionality of the desired component; implementation details are secondary. Software reuse would be enhanced with conceptually organized large libraries of software components. In this paper, we present GURU, a tool that allows automatic building of such large software libraries from documented software components. We focus here on ...

43 [Improving visualization: The challenge of information visualization evaluation](#)

Catherine Plaisant

 May 2004 **Proceedings of the working conference on Advanced visual interfaces**

 Full text available: [pdf\(582.13 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

As the field of information visualization matures, the tools and ideas described in our research publications are reaching users. The reports of usability studies and controlled experiments are helpful to understand the potential and limitations of our tools, but we need to consider other evaluation approaches that take into account the long exploratory nature of users tasks, the value of potential discoveries or the benefits of overall awareness. We need better metrics and benchmark repositories ...

Keywords: adoption, evaluation, return on investment, technology transfer, usability,

usefulness, user studies, visualization

44 Intelligent mobile robots in the workplace: leaving the guide behind

Ronald C. Arkin

June 1988 **Proceedings of the first international conference on Industrial and engineering applications of artificial intelligence and expert systems - Volume 1**

Full text available:  pdf(2.12 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Flexible manufacturing systems (FMS) that incorporate transport robots are currently dominated by the use of automatic guided vehicles. These AGVs generally require significant restructuring of the workplace in order for them to be useful. The concept of flexibility in manufacturing is somewhat compromised by this strategy. Our previous work in mobile robots, resulting in the Autonomous Robot Architecture (AuRA), is applied to the manufacturing domain. This approach, contrary to ...

45 Distributed computing in the workstation environment

Johann Mitlöhner

September 1993 **ACM SIGAPL APL Quote Quad , Proceedings of the international conference on APL**, Volume 24 Issue 1


Full text available:  pdf(570.61 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Exploiting unused processor time in workstation environments can result in large performance gains in user applications. A parallel each operator is shown which implements client-server based distributed processing. A time-consuming algorithm is sped up by using idle workstations in a local area network as APL servers.

46 Computer-controlled display demonstrations of dynamic concepts in computer science

David R. Levine

February 1976 **Proceedings of the ACM SIGCSE-SIGCUE technical symposium on Computer science and education**, Volume 8 , 2 Issue 1 , SI

Full text available:  pdf(642.13 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Computer Science contains a large number of new concepts well outside most students' prior experience. An important characteristic of many of these concepts is their dynamic nature: the execution of a program, assignment of a value to a variable, change of machine state following an interrupt, convergence on a root. By using the computer itself as my demonstration apparatus, I propose to give the students personal exposure to the concepts in action. With a low-cost interactive CRT terminal ...

47 A comparison of human and computer vision systems: a tutorial

Keith Price

February 1974 **ACM SIGART Bulletin**, Issue 50


Full text available:  pdf(711.64 KB) Additional Information: [full citation](#), [abstract](#), [references](#)

I will begin with a general overview of the two types of systems and compare them at a general level. The second section will describe the eye and camera as the input devices. Later sections will discuss segmentation of the scene, visual imagery and encoding of the scene, perception, depth and space perception, and perception of movement.

48 Human-computer discourse in the design of a PASCAL tutor

Beverly Woolf, David D. McDonald

December 1983 **Proceedings of the SIGCHI conference on Human Factors in Computing Systems**


Full text available:  pdf(382.47 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

An effective human-computer discourse system requires more than a clever grammar or a rich knowledge base. It needs knowledge about the user and his understanding of the domain in order to produce a relevant and coherent discourse. We describe MENO, a prototype tutor for elementary PASCAL, which uses a set of speech patterns modelled after complex human discourse and a richly annotated knowledge base to produce a flexible interactive system for the user.

49 [Object-orientation in Java for scientific programmers](#)

Judith Bishop, Nigel Bishop

March 2000 **ACM SIGCSE Bulletin , Proceedings of the thirty-first SIGCSE technical symposium on Computer science education**, Volume 32 Issue 1

Full text available:  pdf(878.03 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Scientific programmers have traditionally programmed in entirely sequential languages such as Fortran, C or Pascal and it could be argued that object-orientation is not a concept that they would need. Yet computer science departments that give courses to scientists and engineers would like to consider teaching them in Java, rather than in one of the older languages. This paper addresses the dual issues of how Java can best supply everything that the older languages do, and then what it can ...

50 [Making it Macintosh: designing the message when the message is design](#)

Lauralee Alben, Jim Faris, Harry Saddler

January 1994 **interactions**, Volume 1 Issue 1

Full text available:  pdf(1.01 MB) Additional Information: [full citation](#), [citations](#), [index terms](#), [review](#)

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